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EXAMINER

BAUMEISTER, BRADLEY W

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 12/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/924,209

Applicant(s)
Gunapala et al.

Examiner
B. William Baumeister

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2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Oct 22, 2002
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on Oct 22, 2002 is: a) ☐ approved b) ☒ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 3/6/2002 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent No. 6,271,537 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Drawings

2. The corrected or substitute drawings were received on 10/22/2002. These drawings are **not** approved. Specifically, those changes that were made to the drawing are acceptable. However, none of the drawings on the second page (FIGs 3-6) include any reference numerals as required by 37 CFR 1.84(p)(5). Further, the Figs 3-5 possess no indication of what the white serpentine region that is positioned between the grating teeth and the quantum well stack is intended to represent.

a. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al., "Corrugated Quantum Well Infrared Photodetectors with Polyimide Planarization for Detector Array Applications," IEEE Transactions on Electron Devices, Vol. 45, No 7, July 1998, pp. 1431-1437.

a. Chen teaches GaAs-based corrugated quantum well IR photodetectors (C-QWIPs) formed on a transparent substrate and having 1-D V grooves that produce fully-isolated, diffractive-grating detector pixel columns, each comprising a lower contact layer a MQW detection region and an upper contact layer. A metal contact is formed over the top contacts. (See e.g., Fig 1). Further, Chen discloses that the lower contact is overetched (e.g., p. 1434, col. 2), indicating that the lower contact also extends into the column. The grooves are filled with an insulating material such as polyimide. The refractive index of GaAs is 3.1 and that of polyimide is 1.6 (p. 1434, col. 2).

b. Regarding claims 2 and 7 setting forth a plurality of separate metallic elements respectively formed over said plurality of quantum well structures, note for example FIGs 1a-c,

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wherein the bottom contact layer serves as the common contact, and a plurality (only one is depicted for clarity) of metal contacts are separately formed over respective, separate sections of plural quantum well structures.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as applied to the claims above and further in view of Choi '469. Chen discloses that the C-QWIPs may be used for multicolor detection and expressly discloses an embodiment wherein a second QWIP is stacked upon a first QWIP by means of an interposed common contact layer; but therein the corrugations are only formed into the upper QWIP due to the large thickness of the combined QWIPs.

a. Choi teaches that it was known to provide multi-color QWIPs wherein the respective wells for detecting the different wavelengths are interlaced, instead of forming one set on top of the other, thereby eliminating the intermediate third, common contact. It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed a

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multicolor QWIP having the respective wavelength wells provided interlaced instead of formed in separate portions of the stack for the purpose of reducing the total thickness and simplifying the wiring requirements by eliminating the need for a third, common contact layer.

Response to Arguments

7. Applicant's arguments filed 9/19/2002 have been fully considered but they are moot in light of the new grounds of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Pan et al., "Normal incident infrared absorption from InGaAs/GaAs quantum dot superlattice," Electronics Letters, 29th August 1996, Vol. 32, No. 18, pp. 1726-1727.

b. Pan et al., "Strong normal-incidence infrared absorption and photo-current spectra from highly uniform (In,Ga)As/GaAs quantum dot structures," Electronics Letters, 14th May 1998, Vol. 34, No. 10, pp. 1019-1020.

c. Rokhinson et al., "Quantum grid infrared photodetectors," 1 February 1999, Applied Physics Letters, Vol. 74, No. 5, pp. 759-761. (The publication date does not predate Applicants' priority date, but the reference is cited for its further discussion of the second Pan reference cited previously above; e.g., pg. 759, col. 1 and citation #8).

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INFORMATION ON HOW TO CONTACT THE USPTO

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister**, at (703) 306-9165. The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'B. William Baumeister', with a stylized, flowing script.

B. William Baumeister

Patent Examiner, Art Unit 2815

December 28, 2002